UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Northwest Region
7600 Sand Point Way N.E., Bldg. 1
Seattle, WA 98115

Refer to:
2003/00013

August 1, 2003

Mr. Lawrence C. Evans
U.S. Army Corps of Engineers
Attn: John Barco
Portland District, CENWP-CO-GP
P.O. Box 2946
Portland, OR 97208-2946

Re: Endangered Species Act Section 7 Formal Consultation and Magnuson-Stevens Fishery Conservation and Management Act Essential Fish Habitat Consultation on the Port of St. Helens Industrial Outfall and Portland General Electric Power Plant, Port Westward Industrial Park, Columbia River, Columbia County, Oregon (Corps No. 200200448)

Dear Mr. Evans:

Enclosed is a biological opinion (Opinion) prepared by NOAA's National Marine Fisheries Service (NOAA Fisheries) pursuant to section 7 of the Endangered Species Act (ESA) for the Port of St. Helens Industrial Outfall and Portland General Electric Power Plant, Port Westward Industrial Park, Columbia River, Columbia County, Oregon. The Corps of Engineers (Corps) determined that the action may adversely affect Snake River sockeye salmon (*Oncorhynchus nerka*), Snake River fall chinook salmon (*O. tshawytscha*), Snake River spring/summer chinook salmon, Upper Columbia River spring-run chinook salmon, Lower Columbia River chinook salmon, Upper Willamette River chinook salmon, Columbia River chum salmon (*O. keta*), Snake River steelhead (*O. mykiss*), Upper Columbia River steelhead, Middle Columbia River steelhead, Upper Willamette River steelhead, and Lower Columbia River steelhead, or destroy or adversely modify designated critical habitat(s)and requested formal consultation on this action. NOAA Fisheries concludes in this Opinion that the proposed action is not likely to jeopardize the continued existence of the above listed species.

Pursuant to section 7 of the ESA, NOAA Fisheries has included reasonable and prudent measures with non-discretionary terms and conditions that NOAA Fisheries believes are necessary and appropriate to minimize the potential for incidental take associated with this project. The interrelated activity of discharging effluent through this new diffuser is analyzed in this Opinion for the purpose of determining jeopardy but, because of the uncertainty of discharge contents, the discharged effluent is not included in the incidental take statement for this Corps permit. Any effluent discharged is subject to take prohibitions under section 9 and rules

promulgated for section 4(d) of the ESA. NOAA Fisheries acknowledges the Port of St. Helens Industrial Outfall may cause take of listed salmon as the result of the effluent discharge.
This document also serves as consultation on essential fish habitat (EFH) pursuant to section 305(b) of the Magnuson-Stevens Fishery Conservation and Management Act (MSA) and its implementing regulations (50 CFR Part 600). NOAA Fisheries concludes that the proposed action will adversely affect designated EFH for coho salmon and chinook salmon (*O. tshawytscha*) and starry flounder (*Platyichthys stellatus*). As required by section 305(b)(4)(A) of the MSA, included are conservation recommendations that NOAA Fisheries believes will avoid, minimize, mitigate, or otherwise offset adverse effects on EFH resulting from the proposed action. As described in the enclosed consultation, 305(b)(4)(B) of the MSA requires that a Federal action agency must provide a detailed response in writing within 30 days after receiving an EFH conservation recommendation.

Questions regarding this letter should be directed to Christy Fellas of my staff in the Oregon Habitat Branch at 503.231.2307.

Sincerely,

for Michael R Crouse

D. Robert Lohn
Regional Administrator

cc: Dana Siegfried, David Evans & Assoc.

Endangered Species Act - Section 7 Consultation
Biological Opinion

&

Magnuson-Stevens Fishery Conservation and Management Act
Essential Fish Habitat Consultation

Port of St. Helens Industrial Outfall
and
Portland General Electric Power Plant,
Port Westward Industrial Park,
Columbia River, Columbia County, Oregon
(Corps No. 200200448)

Agency: U.S. Army Corps of Engineers

Consultation Conducted By: NOAA's National Marine Fisheries Service, Northwest Region

Date Issued: August 1, 2003

Issued by: for Michael R Crouse
D. Robert Lohn
Regional Administrator

Refer to: **2003/00013**

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1. INTRODUCTION

1.1 Background

On January 13, 2003, NOAA's National Marine Fisheries Service (NOAA Fisheries) received a letter from the U.S. Army Corps of Engineers (Corps) requesting formal consultation pursuant to the Endangered Species Act (ESA) for the issuance of a permit under section 10 of the Rivers and Harbors Act and section 404 of the Clean Water Act to the Port of St. Helens and Portland General Electric to allow industrial facilities to be constructed at River Mile 53, Columbia River, Columbia County, Oregon. The Corps determined the proposed action was likely to adversely affect the following ESA-listed species: Snake River sockeye salmon (*Oncorhynchus nerka*), Snake River fall chinook salmon (*O. tshawytscha*), Snake River spring/summer chinook salmon, Upper Columbia River spring-run chinook salmon, Lower Columbia River chinook salmon, Upper Willamette River chinook salmon, Columbia River chum salmon (*O. keta*), Snake River steelhead (*O. mykiss*), Upper Columbia River steelhead, Middle Columbia River steelhead, Upper Willamette River steelhead, and Lower Columbia River steelhead, or destroy or adversely modify designated critical habitat for Snake River sockeye, spring/summer chinook and fall chinook salmon.

An extension in accordance with 50 CFR § 402.14(e) was mutually agreed to by the Corps and NOAA Fisheries on June 26, 2003. The consultation due date is extended to July 25, 2003.

Species' information references, listing and critical habitat designation dates and take prohibitions are listed in Table 1. The objective of this Opinion is to determine whether the proposed action is likely to jeopardize the continued existence of the ESA listed species for these species. This consultation is conducted pursuant to section 7(a)(2) of the ESA and its implementing regulations, 50 CFR 402.

1.2 Proposed Action

<u>Port of St. Helens Outfall</u>.

The wastewater collection pipeline will be approximately 5,200 ft long and will be constructed of 16-inch (in) diameter PVC pipe. The system will be capable of conveying the projected 7 cubic feet per second (cfs) of wastewater from the existing and proposed facilities. To the greatest extent practicable, future connections to the collector line will be in uplands or within existing roadways to minimize disturbance to wetlands. The wastewater collector pipe will be placed in a trench, 12 feet (ft) wide by 5 ft deep, that will be restored to its original condition following placement of the pipe. The pipe will be placed in the ground by sections, with one section being placed and covered before the next section is trenched. The pump station will be in a wet well on approximately 0.1 acre (ac) of land. Approximately 0.15 ac of wetland (approximately 500 ft by 12 ft) will be temporarily disturbed due to pipeline placement.

The outfall and pressure main will be composed of a pipe, diffuser, and concrete support saddles. The entire length of the structure, from the pump station to the end of the diffuser, will be approximately 2,400 ft. Roughly 2,000 ft of this will be on land, with the remaining 400 ft in the water. The outfall pipe will be made of 16-in diameter HDPE pipe.

The landward 40 to 45 ft of the underwater segment will be buried in a trench approximately 3 ft below the riverbed. The pipe will be trenched through the existing dike. The underwater portion of the trenching will be done using trackhoe from the bank and a dragline or clamshell bucket from a spud, or jack-up barge (Parsons Brinckerhoff 2002). The trench will be excavated about 5 ft deep and 3 to 5 ft wide, then backfilled with gravel bedding using barge-mounted equipment to place the pipe about 3 ft below the river bottom. The trench will then be backfilled with gravel, with class 700 riprap at the surface to withstand expected flows.

Beyond the trenched portion, the pipe will emerge from the substrate to rest on concrete support saddles. These supports will be spaced at approximately 15-foot intervals along the pipe, with a total of 22 saddles being placed in the river. The proposed diffuser will be approximately 72 ft long, and will be an alternating multiport type diffuser, capable of passing a maximum flow of 7 cfs. The diffuser will be situated about 5 ft above the river substrate, approximately 65 ft below the river's surface. The pipe, diffuser, and concrete saddles will be constructed on land and will be floated into the Columbia River with a tugboat. The entire system will then be lowered into place.

The construction laydown area is on an approximately 10-acre upland area southeast of the proposed outfall. This upland area consists of approximately 15 ac and is separated from the Columbia River and potential flooding by a dike that protects the area from the 100-year flood. The laydown area will be used to store, service, and refuel equipment and construction materials. The fueling facility will be at least 100 ft from the Columbia River, and will be separated from the river by a dike. The fueling area will be fully contained to prevent any fuels from entering the waterway or spilling onto the ground during the fueling process.

In-water construction is anticipated to require up to two weeks. The Oregon Department of Fish and Wildlife- (ODFW) preferred in-water work period is from November 1 to February 28 for this reach of the Columbia River. However, this is also a period of potentially high current velocities, which may make in-water work conditions unsafe and increase turbidity and sediment dispersal during underwater trenching. Construction is proposed to occur during October to take advantage of low-flow conditions.

The Port of St. Helens is proposing to construct an industrial wastewater collection system, pump station, and outfall structure in the Port Westward area of Columbia County, Oregon. The facility will collect pre-treated industrial wastewater from proposed industrial facilities in the Port Westward Industrial Park, and discharge the water to the Columbia River at RM 53. Proposed industrial facilities include the Port Westward Generating Plant, Summit Westward Generating Plant, and other future industrial residents of the Port Westward site. The wastewater collection system has been designed with the capacity to carry wastewater from future anticipated industrial development. The proposed industrial wastewater system will involve the following components: A wastewater collector pipeline that will convey wastewater from the various industrial users, a pump station, a pressure main, and an outfall structure.

Portland General Electric Generating Plant.
The Port Westward Generating Plant will be sited on approximately 19 acres of industrial-zoned land leased from the Port of St. Helens. The plant footprint is characterized by primarily non-native, upland herbs and grasses. The 650 megawatt gas-fired generating plant will be a combined cycle power plant consisting of two natural gas-fired combustion turbine generators, two heat-recovery steam generators, and two steam turbine generators. The associated balance of plant equipment includes an office/warehouse building, transformers, a substation, cooling towers, a water treatment building, settling basins, and a clarifier, among other facilities.

Construction of the plant will require the placement of approximately 3,000 cubic yards (cu yds) of fill material in jurisdictional wetlands to level and prepare the site for construction. The power plant footprint will impact approximately 0.38 ac of wetlands.

The existing pump station in Bradbury Slough will be retrofitted with additional pumps to supply the 8.3 cfs of water needed to cool the plant. This water will be taken from the Columbia River under the existing Port of St. Helens water right. The water will be pumped to the new generating plant via a 24-in pipeline. After installation of the pipe, the sidecast material will be used to cover the pipe, re-graded to match the original ground contours, and seeded with a wetland seed mix to restore the area to its original condition. Approximately 0.03 ac of wetland will be temporarily disturbed due to pipeline placement.

The pump station is currently fitted with traveling screens and a trash rack. These screens will be re-designed to meet new NOAA Fisheries criteria for protection of anadromous fish. The two existing traveling screens will be removed. They will be unbolted and removed with no demolition work. One will be replaced with a perforated plate screen meeting the ODFW guidance, and protected by a new “trash rack” to deflect river debris. A “wiper” will be installed on the fish screen as required by NOAA Fisheries.

A metal trash rack will be repositioned approximately 2 ft off the face of the pump station. No rake system is proposed because an engineering assessment of the existing mechanism found that it was not necessary at this site. The existing log-boom system will be maintained in Bradbury Slough to deflect larger objects and woody debris away from the intake structure and to protect the screen face from damage.

Construction of the new screen and rack will require extending a new 2-foot by 12-foot footing out from the existing structure. Up to 10 cu yds of sediment may need to be excavated to reach a firm substrate to support the footing. The project will isolate the work area to build concrete forms in place, and an “underwater” mix of concrete will then be pumped into the form. As the concrete is being pumped into the form, divers inside the isolated work area will have a four-inch screened pump and hose by which they will “vacuum” any concrete that escapes the form. This water and concrete mixture will be removed from the aquatic environment and will either be discharged into a truck for offsite disposal or will be run through a filtration system that will remove the concrete sediment and will be discharged in an on-site upland area at least 100 ft from any wetland or waterway. Pilings in front of and beside the existing intake structure may block access to the intake by the divers and may need to be removed. Should piling removal be required, they will be cut off at the base, so as to cause the least disturbance to the substrate and create the least amount of sedimentation.

The new screens will have the following characteristics, meeting or exceeding the NOAA Fisheries guidance:

- The average approach velocity will be approximately 0.24 feet per second (ft/s) across the screen face at the possible maximum withdrawal rate of 40 cfs. Only 8.3 cfs is required for the Port Westward Generating Plant.
- Estimated flow rate in Bradbury Slough is approximately 1.0 ft/s, although the rate is affected by tidal fluctuations. The sweeping velocity at the subject facility exceeds the approach velocity by a factor of three or more. Because the screen face is parallel to the flow, the screen angle criteria are also met.
- New perforated plate or wedge wire type screens will be placed over one bay of the intake structure. Perforated plate will be 16-gauge minimum stainless steel sheet stock with 3/32-inch perforations on a 5/32-inch stagger. Wedge wire will have 0.0689-inch openings. Careful design, manufacture and installation will minimize gaps. Gaps will also be addressed by use of approved sealants and/or resilient gasket materials.
- A bypass system is not required at this structure, as fish will not be diverted from the slough.

A gas pipeline lateral will be used to move fuel from the existing Kelso-Beaver (K-B) gas line to the Port Westward Generating Plant. This pipeline lateral will be approximately 450 ft long and will be installed in a trench. The entire gas pipeline lateral will be constructed in uplands.

The construction laydown area is southeast of the plant site, and beside the existing water supply pump station. The area is approximately 15 ac and is characterized by previously developed areas and non-native upland grasses. It is separated from the Columbia River and potential flooding by a dike. The laydown area will be used to store, service, and refuel equipment and construction materials. The fueling facility will be at least 100 ft from the Columbia River. The fueling area will be contained to prevent any fuels from entering the waterway or spilling onto the ground during the fueling process.

Power will be transmitted from the new generating plant to the Trojan Substation along a corridor approximately 20 miles long. The total width of the corridor will be 125 ft. The maximum area required for tower footprints is 49 sq ft each, however, dependent on the site, the actual requirement may be less.

The section between the proposed plant site and the substation at Alston, Oregon, will be within a PGE (Portland General Electric) existing right-of-way corridor. From the Alston Substation to

Trojan there are two alternative alignments for the transmission line. The preferred transmission line route (north-east) would be within a new corridor beside an existing Bonneville Power Administration (BPA) transmission line corridor. The alternative to the preferred transmission line route is a new right-of-way on the opposite (south-west) side of an existing transmission corridor from the preferred route (north). Both transmission line route alternatives are combined and addressed within this Biological Assessment as they cross the same streams and would have similar impacts to the same habitat types.

The transmission line will avoid impacts to wetlands and streams to the maximum extent practicable; however, there will be approximately 0.02 acres of wetland impacted by tower placement near the plant footprint. For the majority of the transmission line, tower locations were identified based on field verification that the tower locations are upland. There is considerable flexibility in the tower locations because the distance between towers can be varied to avoid streams and wetlands. Transmission lines will typically span low-lying areas (*e.g.,* creeks) between towers. The alternative transmission line routes would also impact 0.02 ac.

Corridor construction includes corridor survey and clearing, tower installation, line installation, and maintenance. The corridor survey will involve clearing narrow lines of sight using hand tools. A 125-foot corridor will be cleared of trees and tall shrubs. Shrub vegetation less than 15 ft tall will be left in wetland and stream buffer areas. Except for corner towers where the line angles, towers will be placed on small integral footings about 5 ft square. Corner towers will rest on poured concrete foundations of approximately 7 ft by 7 ft. Towers will be transported on roads using trucks, and erected using cranes. In inaccessible locations, towers may be transported and erected using helicopters. Power lines and wires will also be strung using existing roads and/or helicopters.

The maintenance of vegetation along the transmission line includes the use of hand-held or mechanical devices to trim or cut trees that may interfere with power lines. In upland areas, the objective is to promote the establishment of lower-growing shrubs and trees that will not compete with the power lines. Maintenance also includes the use of herbicides when appropriate to limit vegetation growth beneath the power lines. The primary method of herbicide application is direct spraying; however, when working away from waterways and wetlands, foliar applications from a back-pack or truck may be the appropriate means of application. PGE will not use aerial application methods in the maintenance of vegetation along the proposed transmission line. The herbicides Garlon 3A and 4 are typically used in upland areas, while Rodeo is used in wetland and riparian areas. Only herbicides labeled for use in riparian areas or around water will be used for vegetation control in these areas. These methods are employed because they are the least detrimental to non-target vegetation and adjacent waterways.

Garlon 4 is only used in injection treatments to treat maple and alder trees with stems less than 3-4 inches in diameter. The injection method has the least risk of off-target herbicide movement which minimizes or eliminates the chance that any material will affect water quality downstream. PGE uses Garlon 3A in 'stump treatments' when tree stems exceed 4 in diameter. The amount of herbicide applied varies and is dependent on tree density and the effectiveness of previous treatments over time. Though relatively low, initial application rates for Garlon 3A and/or Garlon 4 could range up to approximately 3 ounces per acre to control tree sprouting. This is considered the maximum application rate and would only occur where tree densities are extreme. In most instances, however, herbicide application rates would be considerably less than 3 ounces per acre. Herbicides are generally applied at 3-year or longer intervals. As time passes, PGE expects to use less than 0.5 ounce of herbicide per acre for spot treatments. In wet areas or near streams, PGE uses Rodeo to control competing vegetation.

To compensate for fill of 0.40 ac of wetland (0.03 ac of which is temporary disturbance), PGE proposes to enhance approximately 1.5 ac of wetland on site, exceeding the state-required mitigation ratio of 3:1. The wetland mitigation efforts are described in a Conceptual Mitigation Plan prepared for the Joint Removal-Fill Application submitted to USACE. Mitigation for disturbance of 0.03 acre of wetlands for installation of the water supply line will consist of re-grading the area to its original ground contours, and re-seeding the area with native grass and/or groundcover.

2. ENDANGERED SPECIES ACT

2.1 Biological Opinion

2.1.1 Biological Information

The action area is defined by NOAA Fisheries regulations (50 CFR 402) as "all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action." The action area is the Columbia River including the streambed, streambank, water column and adjacent riparian zone at River Mile 53 and 300 ft upstream and 500 ft downstream of the construction area.

Essential habitat features for salmonids are: Substrate, water quality, water quantity, water temperature, water velocity, cover/shelter, food (juvenile only), riparian vegetation, space, and safe passage conditions. The proposed action may affect the essential habitat features of water quality and water temperature. The Columbia River within the action area serves as a rearing and migration area for listed salmonids.

2.1.2 Evaluating Proposed Action

The standards for determining jeopardy are set forth in section 7(a)(2) of the ESA as defined by 50 CFR Part 402. NOAA Fisheries must determine whether the action is likely to jeopardize the listed species and/or whether the action is likely to destroy or adversely modify critical habitat. This analysis involves the initial steps of: (1) Defining the biological requirements and current status of the listed species; and (2) evaluating the relevance of the environmental baseline to the species' current status.

Subsequently, NOAA Fisheries evaluates whether the action is likely to jeopardize the listed species by determining if the species can be expected to survive with an adequate potential for recovery. In making this determination, NOAA Fisheries must consider the estimated level of mortality attributable to: (1) Collective effects of the proposed or continuing action; (2) the environmental baseline; and (3) any cumulative effects. If NOAA Fisheries finds that the action is likely to jeopardize the listed species, NOAA Fisheries must identify reasonable and prudent alternatives for the action.

NOAA Fisheries also evaluates whether the action, directly or indirectly, is likely to destroy or adversely modify the listed species' critical habitat. NOAA Fisheries must determine whether habitat modifications appreciably diminish the value of critical habitat for both survival and recovery of the listed species. NOAA Fisheries identifies those effects of the action that impair the function of any essential element of critical habitat. NOAA Fisheries then considers whether such impairment appreciably diminishes the habitat's value for the species' survival and recovery. If NOAA Fisheries concludes that the action will adversely modify critical habitat, it must identify any reasonable and prudent alternatives available.

For the proposed action, NOAA Fisheries' jeopardy analysis considers direct or indirect mortality of fish attributable to the action. NOAA Fisheries' analysis considers the extent to which the proposed action impairs the function of essential elements necessary for migration, spawning, and rearing of listed species under the existing environmental baseline.

2.1.3 Biological Requirements

The first step in the methods NOAA Fisheries uses for applying the ESA section 7(a)(2) to listed salmonids is to define the species' biological requirements that are most relevant to each consultation. NOAA Fisheries also considers the current status of the listed species, taking into account population size, trends, distribution and genetic diversity. To assess the current status of the listed species, NOAA Fisheries starts with the determinations made in its decision to list the species for ESA protection and also considers new data available that is relevant to the determination.

The relevant biological requirements are those necessary for the listed species to survive and recover to a naturally-reproducing population level, at which time protection under the ESA would become unnecessary. Adequate population levels must safeguard the genetic diversity of the listed stock, enhance its capacity to adapt to various environmental conditions, and allow it to become self-sustaining in the natural environment.

For this consultation, the biological requirements are improved habitat characteristics that function to support successful rearing and migration. The current status of the listed species, based upon their risk of extinction, has not significantly improved since the species were listed.

2.1.4 Environmental Baseline

The most recent evaluation of the environmental baseline for the Columbia River is part of the NOAA Fisheries's Opinion for the Federal Columbia River Power System (FCRPS) issued in December 2000. This Opinion assessed the entire Columbia River system below Chief Joseph Dam, and downstream to the farthest point (the Columbia River estuary and nearshore ocean environment) at which listed salmonids are influenced. A detailed evaluation of the environmental baseline of the Columbia River basin can be found in the FCRPS Opinion (NMFS 2000).

The quality and quantity of freshwater habitats in much of the Columbia River basin have declined dramatically in the last 150 years. Forestry, farming, grazing, road construction, hydrosystem development, mining, and urbanization have radically changed the historical habitat conditions of the basin. Depending on the species, they spend from a few days to one or two years in the Columbia River and its estuary before migrating out to the ocean and another one to four years in the ocean before returning as adults to spawn in their natal streams.

Water quality in streams throughout the Columbia River basin has been degraded by human activities such as dams and diversion structures, water withdrawals, farming and grazing, road construction, timber harvest activities, mining activities, and urbanization. Tributary water quality problems contribute to poor water quality where sediment and contaminants from the tributaries settle in mainstem reaches and the estuary. Temperature alterations also affect salmonid metabolism, growth rate, and disease resistance, as well as the timing of adult migrations, fry emergence, and smoltification. Many factors can cause high stream temperatures, but they are primarily related to land-use practices rather than point-source discharges. Loss of wetlands and increases in groundwater withdrawals have contributed to lower base-stream flows, which in turn contribute to temperature increases. Channel widening and land uses that create shallower streams also cause temperature increases.

Pollutants also degrade water quality. Salmon require clean gravel for successful spawning, egg incubation, and emergence of fry. Fine sediments clog the spaces between gravel and restrict the flow of oxygen-rich water to the incubating eggs. Excess nutrients, low levels of dissolved oxygen, heavy metals, and changes in pH also directly affect the water quality for salmon and steelhead.

Water quantity problems are also a significant cause of habitat degradation and reduced fish production. Withdrawing water for irrigation, urban, and other uses can increase temperatures, smolt travel time, and sedimentation. Return water from irrigated fields can introduce nutrients and pesticides into streams and rivers. On a larger landscape scale, human activities have affected the timing and amount of peak water runoff from rain and snowmelt. Many riparian areas, flood plains, and wetlands that once stored water during periods of high runoff have been developed. Urbanization paves over or compacts soil and increases the amount and concentration of runoff reaching rivers and streams.

Based on the best available information regarding the current status of the listed species range-wide, the population status, trends, genetics, and the poor environmental baseline conditions within the action areas, NOAA Fisheries concludes that the biological requirements of these species are not currently being met. Degraded habitat resulting from agricultural practices, forestry practices, road building, and residential construction indicate many aquatic habitat indicators are not properly functioning within the Columbia River basin. Actions that do not maintain or restore properly functioning aquatic habitat conditions would be likely to jeopardize the continued existence of these species.

The project area is bounded by the Columbia River to the north and Bradbury Slough to the east. The project area is within the range of tidal influence along the lower reach of the Columbia River, and high-velocity currents are present at times. Bradbury Slough is a slow-moving, low-gradient river channel with levels that fluctuate daily with tidal and river influence. A dike has been built around much of the project site, eliminating most riparian vegetation, floodplain connection, and potential for refugia habitat.

The site has a long history of industrial use, and is partially occupied by the existing Beaver Generating Plant, but also has large areas of unoccupied land. The proposed power plant site is zoned industrial, but is primarily overgrown with grassland, wetland, and herbaceous plant communities. PGE generally mows the grassland areas annually to keep them from becoming overgrown.

The project area also includes the approximately 20-mile path of a new transmission line that will extend eastward from the plant site to the Trojan substation at Rainier, Oregon. The transmission line corridor runs through rural areas with a mixture of second-growth mixed forest and agricultural fields. The corridor lies primarily within the Beaver Creek basin, and also crosses the Green Creek and Fox Creek basins. Actual transmission line crossings include Tank Creek, two crossings of North Fork Stewart Creek (a Beaver Creek tributary), one crossing of Green Creek and its tributaries, seven crossings of Beaver Creek and its small tributaries, and an unnamed stream near the Trojan Power Plant. All streams crossed are tributaries to the Columbia River.

Beaver Falls forms a migration barrier that prevents anadromous fish from reaching the vicinity of the power line crossings in that basin. A tide gate blocks anadromous fish access to Tank Creek downstream of the power line crossing. Resident rainbow and cutthroat trout may inhabit the reaches near the power line crossings.

2.1.5 Analysis of Effects

2.1.5.1 Direct Effects of the Proposed Action

The proposed project includes construction of the outfall on land and in the water, upgrade of a screen at the generating plant and construction of a new transmission line corridor from the project area to the Trojan substation (20 miles long). Potential effects on salmonids and crititcal habitat include:

- Potential hazardous material spills (oil, gasoline) from heavy construction equipment
- Disturbance of riparian vegetation for the construction staging area
- In-water work to place 400 ft of pipeline in the Columbia River
- Upgrades to the existing screen at the PGE facility intake, including contact between water and fresh concrete
- Herbicides use for maintenance of the transmission line corridor

<u>Construction</u>.
To the extent that vegetation is providing habitat function, such as delivery of large wood, particulate organic matter or shade to a riparian area and stream, root strength for slope and bank stability, and sediment filtering and nutrient absorption from runoff, removal of that vegetation for construction will reduce or eliminate those habitat values (Darnell 1976, Spence *et al.* 1996). Denuded areas lose organic matter and dissolved minerals, such as nitrates and phosphates. Microclimate can become drier and warmer with corresponding increases in wind speed, and soil and water temperature. Water tables and spring flow can be reduced. Loose soil can temporarily accumulate in the construction area. In dry weather, this soil can be dispersed as dust. In wet weather, loose soil is transported to streams by erosion and runoff, particularly in steep areas. Erosion and runoff increase the supply of soil to lowland drainage areas and eventually to aquatic habitats where they increase water turbidity and sedimentation. This combination of erosion and mineral loss can reduce soil quality and site fertility in upland and riparian areas. Concurrent in-water work can compact or dislodge channel sediments, thus increasing turbidity and allowing currents to transport sediment downstream where it is eventually redeposited. Continued operations when the construction site is inundated can significantly increase the likelihood of severe erosion and contamination. The proposed action will avoid or minimize these effects with the following conservation measures:

- Boundaries of clearing limits associated with site access and construction will be marked to avoid or minimize disturbance of riparian vegetation, wetlands and other sensitive sites.
- A pollution and erosion control plan will be prepared and carried out to prevent pollution and erosion related to construction operations. Erosion control elements of the plan will address materials storage sites, access roads, stream crossings, construction sites, borrow pit operations, haul roads, and inspection and replacement of erosion controls.
- A supply of emergency erosion control materials will be on hand, and temporary erosion controls will be installed and maintained in place until site restoration is complete.
- Existing roadways or travel paths will be used whenever possible.
- The number of temporary access roads will be minimized and roads will be designed to avoid adverse effects.

Use of heavy equipment during construction creates the opportunity for accidental spills of fuel, lubricants, hydraulic fluid and similar contaminants into the riparian zone or water where they can injure or kill aquatic organisms. Discharge of construction water used for vehicle washing, concrete washout, pumping for work area isolation, and other purposes can carry sediments and a variety of contaminants to the riparian area and stream. The proposed action will minimize these effects by staging heavy equipment away from the river.

In-water work for the proposed project will not require work area isolation or handling of fish. The landward 45 ft of the pipeline will be trenched using a trackhoe from the bank. The remaining pipeline, diffuser and concrete saddles will be constructed on land and floated into the Columbia River with a tugboat and lowered into place. Fish are expected to avoid the project area during the construction of the pipeline. Once in place, the pipeline and diffuser are at 60-65 depth and not likely to disturb migrating salmonids or block passage in the Columbia River.

The direct physical and chemical effects of post-construction site restoration included as part of the proposed action are essentially the reverse of the construction activities that go before it. Bare earth is protected by seeding, planting woody shrubs and trees, and mulching. This immediately dissipates erosive energy associated with precipitation and increases soil infiltration. It also accelerates vegetative succession necessary to restore the delivery of large wood to the riparian area and stream, root strength necessary for slope and bank stability, leaf and other particulate organic matter input, sediment filtering and nutrient absorption from runoff, and shade. Microclimate will become cooler and more moist, and wind speed will decrease. All disturbed areas will be replanted with native vegetation at a density of 500 plants per ac and monitored for five years.

<u>Intake Screens</u>.
The existing screen will be fitted with properly designed fish screens that meet NOAA Fisheries' criteria for protecting anadromous fish. A new cleaning system and trash rack will be installed. The replacement of the screen will have a beneficial effect on salmonids in the project area. A properly functioning screen will prevent salmonids from being attracted to or pulled into the intake pipe and eventually the intake pump. No additional water is proposed to be diverted, therefore water quantity will not be affected.

To construct the new screens, divers will be employed to pour a footing of concrete into the water to support the new intake. Pouring concrete in the vicinity of water increases the risk of killing or injuring listed fish due to the potential rapid change in water pH. This rapid pH change may lead to biochemical shock in fish. The volume of spill and receiving water will determine the extent of the changes in local water pH. It is expected the potential volume spilled would be minimal due to the following conservation measures:

- Concrete will be pumped into a form using a four-inch screened pumped by divers
- As the concrete is being pumped, divers will vacuum any escaped concrete immediately
- Any water and concrete mixture removed from the river will be filtered and discharged at an upland location or disposed of off-site at the appropriate facility

To further minimize effects during construction, the concrete work area should be isolated from flowing water. The long-term beneficial effect of upgrading the intake is to prevent harm or death to listed salmon in the project area from the diversion of water from the Columbia River for the PGE generating plant.

Transmission Line Corridor.
The application of herbicides in proximity to lakes and river systems can result in the transport of potentially toxic chemicals (active ingredients and/or adjuvants) to surface waters (USGS 1999). Such actions constitute a chemical modification of salmon habitat, and they have the potential to harm threatened or endangered species. Similar to physical forms of habitat modification (i.e. activities that increase sedimentation, increase water temperatures, or reduce the volume of water in streams), chemical habitat modification can adversely affect salmon via pathways that are both indirect and direct. In terms of indirect effects, herbicides can impair the essential biological requirements of salmon if they undermine the physical, chemical, or biological processes that collectively support a productive aquatic ecosystem (Preston 2002). The direct effects of herbicides are a concern if they significantly impair the physiological or behavioral performance of salmonids in ways that will reduce growth and survival, migratory success, or reproduction.

Rodeo.

Rodeo contains the active ingredient glyphosate, with a formulation of 53.8% glyphosate and 46.2% inert ingredients. Rodeo is specifically labeled for use in and around aquatic sites, including all bodies of fresh and brackish water, flowing or non-flowing. Average half-life in soil for the active ingredient in Rodeo is 60 days, and degradation of 90% of the applied Rodeo occurs in less than six months. In water, the half-life is two to ten weeks, and glyphosate absorbs strongly to soil. Rodeo is practically non-toxic to fish and aquatic invertebrate animals, and it does not bioaccumulate in fish. Rodeo will be applied within the 100-year floodplain.

The following information was taken from the Risk Assessment of glyphosate prepared for the U.S. Forest Service (SERA 2003).

The dose-response assessment for fish is substantially complicated by information indicating that some fish species such as salmonids are more sensitive to glyphosate than other species of fish and by information indicating that some surfactants are very toxic to fish and may substantially increase to the toxicity of glyphosate to fish. These factors are further complicated by gaps in the available data. Given the apparently high sensitivity of some salmonids to glyphosate, it would be desirable to have a life cycle toxicity study or at least an egg-and-fry study available on salmonids. In addition, given the apparently high toxicity of surfactant formulations compared to technical grade glyphosate, a life cycle toxicity study on at least one formulation containing a toxic surfactant would be desirable. Such studies, however, are not available. Consequently, an approximation method commonly used is mixtures risk assessment (the relative potency method) is employed to estimate a chronic NOEC (no observed effect concentration) of 2.57 mg/L for technical grade glyphosate in sensitive species of fish based on an observed NOEC value of 25.7

mg/L in tolerant species of fish. Similarly, NOEC values for glyphosate formulations containing toxic surfactants are estimated at 0.36 mg/L for sensitive species and 0.64 mg/L for tolerant species. A similar approach is used estimate the potential for acute effects based on 96-hour LC50 values. LC50 values rather than data on sublethal effects are used to characterize risks from acute exposures because most of the data on sublethal effects are based on very short-term exposures to concentrations in the range of 96-hour LC50 values. Most of the available toxicity data suggest that amphibians are no more sensitive to glyphosate than fish. Consequently, a separate dose-response assessment for amphibians is not conducted in this risk assessment.

Triclopyr.
Triclopyr is a pyridine compound that is registered by the EPA as a RUP (Restricted Use Pesticide), meaning that it may be purchased and used only by certified applicators. Trade names for herbicides containing triclopyr include Access, Crossbow, ET, Garlon®, and others. The product formulation used for Garlon® must contain the word Danger on its label.

Triclopyr is a selective systemic herbicide used for control of woody or broadleaf plants (Extoxnet website). It is commonly used along rights-of-way, in forests, on industrial lands, and on grasslands and parklands.

Garlon® 3A (Dow AgroSciences) is a formulation made up of triclopyr triethylamine (TEA) salt (44.4%) and inert ingredients (55.6%). The majority of the inert ingredients (98.2%) have not been identified by the manufacturer. Those inert ingredients that have been identified (water, emulsifiers, surfactants, and ethanol) comprise approximately 1% of the formulation. However, toxicological testing of the Garlon® 3A formulation, including the unidentified ingredients, has occurred (Table 1).

Table 1. The Aquatic Toxicity of Triclopyr and Garlon® 3A.

	Triclopyr	Garlon® 3A
Rainbow Trout 96-hr LC_{50}	8.4 ppm(1)	420 ppm(2)
Coho Salmon 96-hr LC_{50}		463 ppm(2)
Chinook Salmon 96-hr LC_{50}	7.8 ppm(1)	275 ppm(2)
Rainbow Trout 1-hr EC (avoidance)		800 ppm(3)
Rainbow Trout 6-hr EC (equilibrium)		200 ppm(3)
Invertebrate 48-hr LC_{50}		1,140 ppm(4)
Invertebrate 96-hr LC_{50}	133 ppm(1)	

(1) USFS 2001
(2) SERA 1996
(3) Morgan *et al.* 1991
(4) Information Ventures, Inc. 1995

Garlon® 3A is described as low in toxicity to fish with a 96-hour LC_{50} of 463 ppm (SERA 1996) (Table 1). This reflects the toxicity of the formulation, and does not consider typical spray application solutions that recommend the use of additional surfactants. Juvenile coho salmon (0+ presmolt) exposed to Garlon® 3A (200 or 320 ppm) for a 4-hour period were found to have significantly ($P<0.05$) elevated plasma lactate levels in blood samples, which may be an indicator of acute physiological stress (Janz *et al.* 1991). However, corroboratory evidence was not found in that other relevant indicators were not significantly elevated. The authors found "juvenile coho salmon were not severely stressed" by the 4-hr Garlon® 3A exposure, although they acknowledged that wild coho salmon stocks may display "more extreme" stress responses than the subject hatchery specimens (Janz *et al.* 1991). Bioconcentration in aquatic species is minimal (SERA 1996).

Persistence in soils is affected by moisture, nutrients, and temperature (Norris *et al.* 1991). The half-life of triclopyr in western Oregon soils has been found to range from 75 to 81 days with detectable residues found 477 days after treatment (USFS 2001). In Sweden, triclopyr has been found to last more than 2 years in soils (Norris *et al.* 1991). TCP (3,5,6-trichloro-2-pyridinol) is the initial degradation product of triclopyr in soil, and is also the major degradation product of chlorpyrifos, an insecticide. The half-life of TCP ranges from 8 to 279 days (USFS 2001). TMP is a less frequent product found in smaller amounts. The half-life of TMP is 50 to 300 days (USFS 2001). Carbon dioxide is the final degradation product.

Garlon® 3A is highly soluble in water and has characteristics conducive to leaching (*i.e.,* low adsorption potential) (USFS 2001). Several studies have documented triclopyr entry into streams (Norris *et al.* 1991). However, a laboratory study found "little likelihood that triclopyr will leach from forest applications sites into water" (Norris *et al.* 1991). Forest and pasture field studies have similarly found "little indication that triclopyr will leach substantially" in loamy soils (USFS 2001). Photolysis appears to be the major degradation process in natural waters (Norris *et al.* 1991) with the degradation product being oxamic acid and other non-chlorinated aliphatics (SERA 1996). Field tests show that the half-life for triclopyr in water exposed to sunlight ranges from 3 hours to 4.3 days (USFS 2001, Norris *et al.* 1991). In sterile water, which generates a different degradation product, triclopyr has a half-life in the absence of sunlight of approximately 3 months (SERA 1996). No information is available for the half-life in darkness for natural waters.

Johansen and Geen (1990) examined the sublethal effects of Garlon 4 on salmonids (rainbow trout) using flow-through systems. At concentrations of 0.32-0.43 mg/L, about a factor of 2 below the 96-hour LC_{50} determined by these investigators, fish were lethargic. At levels of 0.1 mg/L, fish were hypersensitive over 4-day periods of exposure. This is reasonably consistent with the threshold for behavioral changes in rainbow trout for Garlon 4 of 0.6 mg/L (Morgan *et al.* 1991). The corresponding threshold for behavioral changes to fish exposed to Garlon 3A was 200 mg/L (Morgan *et al.* 1991), and is consistent with the relative acute lethal potencies of these two agents. The limited acute toxicity data on non-salmonid species suggest that these species are about as sensitive to the various forms of triclopyr as salmonids.

To minimize the effects of vegetation management from maintenance of the transmission corridor, a buffer will be left in the riparian area next all streams. In addition, Garlon® will be used in upland areas and Rodeo® will be used within 100 ft of flowing water. No herbicides will be sprayed directly into any waterway.

2.1.5.2 Interrelated and Interdependent Actions

Interrelated and interdependent actions of the proposed action include the changes in water quality in the Columbia River due to effects of the constituents and temperature of the discharge effluent. The proposed outfall will serve new industrial facilities including the Summit Westward generating plant, the PGE generating plant and Cascase Grain Products ethanol plant. While the new industrial facilities do not propose to add constituents to the water, the processing of the water withdrawn from the Columbia River will concentrate the contaminants already present in the water.

Water Temperature.
The Columbia River in the action area is currently listed with the Oregon Department of Environmental Quality (DEQ) as water quality limited during the summer months, when the temperature often exceeds 20 °C. The proposed outfall will discharge water up to 30 °C instantaneous temperature. According to the modeling, ambient temperature is expected to be reached within 3 ft of the diffuser, however the concentrations within the zone of initial dilution are approximate and results within this zone are beyond the capacity of the model. Some salmonids may be migrating through the thermal plume.

Temperature is important in controlling many physiological and behavioral processes in salmon and steelhead (McCullough *et al.* 2001). Water temperature can affect chemical concentrations of some constituents, such as: Dissolved oxygen, pH, hardness and alkalinity, and the toxicity of some constituents such as: Ammonia, organics, metals, cyanide, chlorine, and nitrogen. Temperature affects a number of biological interactions, which may affect or alter ecological regimes, including, competition and predation, metabolic function, disease, and prey forage. The National Academy of Sciences (NAS; 1972, in McCullough *et al.* 2001) recommendations for water temperature exposure for protection of aquatic life specify maximum acceptable temperatures for prolonged exposures (> 1 wk), winter maximum temperatures, short-term exposure to extreme temperature, and suitable reproduction and development temperatures.

Various temperature thresholds and optimum ranges can variably affect different salmonid species and life stages, however, most results are generally quite consistent. Data from many experiments provide evidence that temperatures tolerated by juvenile life stages of salmonids (and other species of fish as well) are a function of at least three factors: The acclimation temperature; the magnitude of the difference between the acclimation temperature and the elevated temperature; and the duration of exposure to the elevated temperature. The acclimation temperature is the temperature of the water the fish are living in before being exposed to the elevated temperature. The elevated temperature that a salmonid can tolerate increases with increasing acclimation temperature

Adverse effects to salmonid fishes from water temperatures above 17.8°C (64°F) can include: (1) Increased adult mortality and reduced gamete survival during pre-spawn holding; (2) reduced growth of alevins or juveniles; (3) reduced competitive success relative to non-salmonids; (4) out-migration from unsuitable areas and truncation of spatial distribution; (5) increased disease virulence, and reduced disease resistance; (6) delay, prevention, or reversal of smoltification; and (7) potentially harmful interactions with other habitat stressors (Adams *et al.* 1975, Reeves *et al.* 1987, Berman 1990, Marine 1992, ODEQ 1995, McCullough 1999, Dunham *et al.* 2001, Materna 2001, McCullough *et al.* 2001, Sauter *et al.* 2001).

Areas of increased temperature are expected to be localized and deep in the water column (55 - 65 ft). Effects to salmonids should not result from the proposed project since most salmonids are expected to be present in the upper 40 ft of the water column, 20-25 ft above the diffuser for the proposed outfall. Occassionally, juvenile may utilize the area from 40-50 ft of the water column at night, but are not expected to stay long enough at this depth to be adversely affected by the thermal plume.

Metals.

The effluent will have the following metals (monthly average concentrations): cadmium (10 µg/L), copper (15 µg/L), lead (10 µg/L), mercury (0.50 µg/L), zinc (20 µg/L). These concentrations are estimated as the worst case scenario and cumulative concentrations of metals will be less than these values used for analysis. These estimates are based on the industrial facilities planned for construction in the project area. Any future proposed industrial facilities may change the volume or concentration of the effluent.

The various metals have a wide variety of effects on organisms. They can cause enzyme inhibition due to reactions with the sulfhydryl groups of proteins. Some metals such as cadmium will compete with essential metals such as zinc for enzyme binding sites (Sorensen 1991). Metal exposure can result in damage to gill and gut tissues, disrupt nervous system operation, and alter liver and kidney functions. Some metals can affect olfactory responses which are important to migrating salmonid species.

Elevated metal concentrations can cause growth inhibition and impaired reproduction of plants and primary producers. An alteration of primary production can then impact growth and survival farther up the food chain, including listed salmonids. Impacts from metal contamination can shift species composition and abundance towards more pollution-tolerant species. Planktonic and benthic invertebrates can ingest particulate metals from the water column and sediments and then be eaten by other organisms. Thus, dietary exposure may be a significant source of metals to aquatic and aquatic dependent organisms.

A direct pathway for dissolved metals into aquatic organisms is through the gills. Dissolved metals are also taken up directly by bacteria, algae, plants, and planktonic and benthic invertebrates. Dissolved forms of metals can adsorb to particulate matter in the water column and enter organisms through various routes. Metals adsorbed to particulates can also be transferred across the gill membranes (Sorensen 1991).

Although metals bound to sediments are generally less bioavailable to organisms than those dissolved in water, they are still present, and changes in the environment (*e.g.,* dredging, storm events, temperature, lower water levels, biotic activity) can significantly alter the bioavailability of these metals.

The effects of metals may be generalized to include: Central nervous system disruption, altered liver and kidney function, impaired reproduction, decreased olfactory response, delayed smoltification, impaired ability to avoid predation and capture prey, growth inhibition, growth stimulation, changes in prey species community composition increasing foraging budgets, and lethality.

The effluent is not expected to jeopardize the continued existence of listed species, but the effects of the effluent have been analyzed for the purposes of conducting a jeopardy analysis. The contents of the effluent are not within the jurisdiction of the Corps, the action agency. Therefore, NOAA Fisheries acknowledges the Port of St. Helens Industrial Outfall may cause take of listed salmon as the result of the effluent discharge and advises the applicant that the act of discharging
effluent into the Columbia River is subject to take prohibitions of section 9 and rules promulgated under section 4(d) of the ESA.

2.1.5.3 Cumulative Effects

Cumulative effects are defined in 50 CFR 402.02 as those effects of "future State or private activities, not involving Federal activities, that are reasonably certain to occur within the action area of the Federal action subject to consultation." Future Federal actions, including the ongoing operation of hydropower systems, hatcheries, fisheries, and land management activities are being (or have been) reviewed through separate section 7 consultation processes. Therefore, these actions are not considered cumulative to the proposed action.

NOAA Fisheries is not aware of any specific future non-federal activities within the action area that would cause greater impacts to listed species than presently occurs. NOAA Fisheries assumes that future private and state actions will continue at similar intensities as in recent years.

2.1.5.4 Effects to Critical Habitat

NMFS designates critical habitat based on physical and biological features that are essential to the listed species. Essential elements for designated critical habitat include substrate, water quality, water quantity, water temperature, food, riparian vegetation, access, water velocity, space and safe passage.

Effects to critical habitat are included in the effects description expressed above.

2.1.6 Conclusion

NOAA Fisheries has determined that, based on the available information, the proposed action is not likely to jeopardize the continued existence of listed species nor result in the destruction or adverse modification of critical habitat. NOAA Fisheries used the best available scientific and commercial data to analyze the effects of the proposed action on the biological requirements of the species relative to the environmental baseline, together with cumulative effects. NOAA Fisheries believes that the proposed action will cause a minor, short-term degradation of anadromous salmonid habitat due to increased turbidity and potential hazardous material spills from construction. The maintenance of the transmission corridor may harm listed species indirectly from the use of herbicides, but conservation measures for application methods and type of chemicals will minimize the likelihood of herbicides reaching waterways. NOAA Fisheries expects some direct or delayed mortality of juvenile UWR steelhead or UWR chinook salmon as a result of fish rescue, salvage and relocation activities should any be present in the action area during the proposed action.

These conclusions are based on the following considerations: (1) Construction will take place before the in-water work window to take advantage of low flows, which may allow some work to be done in the dry; (2) any increases in sedimentation and turbidity in the project area will be short-term and minor in scale, and would not change or worsen existing conditions for stream substrate in the action area; (3) best management practices will be followed for all construction activities and herbicide application; and (4) the proposed action is not likely to impair properly functioning habitat, or retard the long-term progress of impaired habitat toward proper functioning condition essential to the long-term survival and recovery at the population or ESU scale.

2.1.7 Conservation Recommendations

Section 7(a)(1) of the ESA directs Federal agencies to use their authorities to further the purposes of the ESA by carrying out conservation programs for the benefit of threatened and endangered species. Conservation recommendations are discretionary measures suggested to minimize or avoid adverse effects of a proposed action on listed species, minimize or avoid adverse modification of critical habitat, and to develop additional information. NOAA Fisheries believes the following conservation recommendation is consistent with these obligations, and therefore should be carried out by the Corps.

1. The Corps should advise the applicant to monitor levels of the following constituents in the effluent: Copper, mercury, lead, chlorine, and temperature. These values should be measured and reported on a monthly basis to NOAA Fisheries.

To keep NOAA Fisheries informed of actions minimizing or avoiding adverse effects, or those that benefit listed salmon and steelhead or their habitats, we request notification of the achievement of any conservation recommendations when COE submits the monitoring report for this Opinion.

2.1.8 Reinitiation of Consultation

Consultation must be reinitiated if: (1) The amount or extent of taking specified in the incidental take statement is exceeded, or is expected to be exceeded; (2) new information reveals effects of the action may affect listed species in a way not previously considered; (3) the action is modified in a way that causes an effect on listed species that was not previously considered; or (4) a new species is listed or critical habitat is designated that may be affected by the action (50 CFR 402.16).

2.2 Incidental Take Statement

Section 9 and rules promulgated under section 4(d) of the ESA prohibit any taking (harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, collect, or attempt to engage in any such conduct) of listed species without a specific permit or exemption. "Harm" is further defined to include significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, and sheltering. "Harass" is defined as actions that create the likelihood of injuring listed species by annoying it to such an extent as to significantly alter normal behavior patterns which include, but are not limited to, breeding, feeding, and sheltering. "Incidental take" is take of listed animal species that results from, but is not the purpose of, the Federal agency or the applicant carrying out an otherwise lawful activity. Under the terms of section 7(b)(4) and section 7(o)(2), taking that is incidental to, and not intended as part of, the agency action is not considered prohibited taking provided that such taking is in compliance with the terms and conditions of this incidental take statement An incidental take statement specifies the impact of any incidental taking of threatened species. It also provides reasonable and prudent measures that are necessary to minimize impacts and sets forth terms and conditions with which the action agency must comply to implement the reasonable and prudent measures.

2.2.1 Amount or Extent of the Take

NOAA Fisheries anticipates that the actions covered by this Opinion are reasonably certain to result in incidental take of listed species because of potential adverse effects from increased sediment levels, chemical contamination, and the potential for direct incidental take during in-water work. Handling of juvenile salmon during the work isolation process may result in incidental take of individuals if adequate water quality allows juvenile salmonids to be present during the construction period. NOAA Fisheries anticipates non-lethal incidental take of up to 25 individuals, of which, lethal take of up to 2 juvenile salmon could occur as a result of the fish rescue, salvage and relocation activities covered by this Opinion. The potential adverse effects of the other project components on population levels are largely unquantifiable and NOAA Fisheries does not expect them to be measurable in the long term.

The extent of the take is limited to disturbance resulting from construction activities within the action area. The action area is the Columbia River including the streambed, streambank, water column and adjacent riparian zone at River Mile 53 and 300 ft upstream and 500 ft downstream of the construction area.

The act of discharging effluent into the Columbia River is subject to take prohibitions of section 9 and rules promulgated under section 4(d) of the ESA.

2.2.2 Reasonable and Prudent Measures

The measures described below are non-discretionary. They must be implemented so that they become binding conditions in order for the exemption in section 7(a)(2) to apply. The COE has the continuing duty to regulate the activities covered in this incidental take statement. If the COE fails to adhere to the terms and conditions of the incidental take statement through enforceable terms added to the document authorizing this action, or fails to retain the oversight to ensure compliance with these terms and conditions, the protective coverage of section 7(a)(2) may lapse.

NOAA Fisheries believes that the following reasonable and prudent measures are necessary and appropriate to avoid or minimize take of listed salmonid species resulting from the action covered by this Opinion.

The COE shall include measures that will:

1. Minimize incidental take from general construction by excluding unauthorized permit actions and applying permit conditions that avoid or minimize adverse effects to riparian and aquatic systems.

2. Minimize the extent of incidental take associated with herbicide application by implementing BMPs that minimize the movement of the herbicide to surface and surface-ground water mixing zones.

3. Complete a comprehensive monitoring and reporting program to ensure implementation of these conservation measures are effective at minimizing the likelihood of take from permitted activities.

2.2.3 Terms and Conditions

To be exempt from the prohibitions of section 9 of the ESA, the Corps must comply with the following terms and conditions, which implement the reasonable and prudent measures described above for each category of activity.

1. To implement reasonable and prudent measure #1 (construction), the Corps shall ensure that:

a. Minimum area. Confine construction impacts to the minimum area necessary to complete the project.

b. Timing of in-water work. Work below the bankfull elevation[1] will be completed during October 2003, unless otherwise approved in writing by NOAA Fisheries.

c. Cessation of work. Cease project operations under high flow conditions that may result in inundation of the project area, except for efforts to avoid or minimize resource damage.

d. Pollution and Erosion Control Plan. Prepare and carry out a pollution and erosion control plan to prevent pollution caused by surveying or construction operations. The plan must be available for inspection on request by Corps or NOAA Fisheries.

   i. Plan Contents. The pollution and erosion control plan will contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.

      (1) The name and address of the party(s) responsible for accomplishment of the pollution and erosion control plan.

      (2) Practices to prevent erosion and sedimentation associated with access roads, stream crossings, drilling sites, construction sites, borrow pit operations, haul roads, equipment and material storage sites, fueling operations, staging areas, and roads being decommissioned.

      (3) Practices to confine, remove and dispose of excess concrete, cement, grout, and other mortars or bonding agents, including measures for washout facilities.

      (4) A description of any regulated or hazardous products or materials that will be used for the project, including procedures for inventory, storage, handling, and monitoring.

      (5) A spill containment and control plan with notification procedures, specific cleanup and disposal instructions for different products, quick response containment and cleanup measures that will be available on the site, proposed methods for disposal of spilled materials, and employee training for spill containment.

      (6) Practices to prevent construction debris from dropping into any stream or water body, and to remove any material that does drop with a minimum disturbance to the streambed and water quality.

   ii. Inspection of erosion controls. During construction, monitor instream turbidity and inspect all erosion controls daily during the rainy season and

[1] 'Bankfull elevation' means the bank height inundated by a 1.5 to 2-year average recurrence interval and may be estimated by morphological features such average bank height, scour lines and vegetation limits.

weekly during the dry season, or more often as necessary, to ensure the erosion controls are working adequately.[2]

(1) If monitoring or inspection shows that the erosion controls are ineffective, mobilize work crews immediately to make repairs, install replacements, or install additional controls as necessary.

(2) Remove sediment from erosion controls once it has reached 1/3 of the exposed height of the control.

e. Construction discharge water. Treat all discharge water created by construction (*e.g.*, concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) as follows.

i. Water quality. Design, build and maintain facilities to collect and treat all construction discharge water, including any contaminated water produced by drilling, using the best available technology applicable to site conditions. Provide treatment to remove debris, nutrients, sediment, petroleum hydrocarbons, metals and other pollutants likely to be present.

ii. Discharge velocity. If construction discharge water is released using an outfall or diffuser port, velocities may not exceed 4 ft/s, and the maximum size of any aperture may not exceed one inch.

iii. Pollutants. Do not allow pollutants including green concrete, contaminated water, silt, welding slag, sandblasting abrasive, or grout cured less than 24 hours to contact any wetland or the 2-year floodplain.

f. Piling removal. If a temporary or permanent piling will be removed, the following conditions apply.

i. Dislodge the piling with a vibratory hammer.

ii. Once loose, place the piling onto the construction barge or other appropriate dry storage site.

iii. If a treated wood piling breaks during removal, either remove the stump by breaking or cutting 3 ft below the sediment surface or push the stump in to that depth, then cover it with a cap of clean substrate appropriate for the site.

iv. Fill the holes left by each piling with clean, native sediments, whenever feasible.

g. Preconstruction activity. Complete the following actions before significant[3] alteration of the project area.

i. Marking. Flag the boundaries of clearing limits associated with site access and construction to prevent ground disturbance of critical riparian

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[2] 'Working adequately' means that project activities do not increase ambient stream turbidity by more than 10% above background 100 ft below the discharge, when measured relative to a control point immediately upstream of the turbidity causing activity.

[3] 'Significant' means an effect can be meaningfully measured, detected or evaluated.

vegetation, wetlands and other sensitive sites beyond the flagged boundary.

ii. Emergency erosion controls. Ensure that the following materials for emergency erosion control are onsite.

(1) A supply of sediment control materials (*e.g.*, silt fence, straw bales[4]).

(2) An oil-absorbing, floating boom whenever surface water is present.

iii. Temporary erosion controls. All temporary erosion controls will be in-place and appropriately installed downslope of project activity within the riparian area until site restoration is complete.

h. Heavy Equipment. Restrict use of heavy equipment as follows:

i. Choice of equipment. When heavy equipment will be used, the equipment selected will have the least adverse effects on the environment (*e.g.*, minimally sized, low ground pressure equipment).

ii. Vehicle and material staging. Store construction materials, and fuel, operate, maintain and store vehicles as follows.

(1) To reduce the staging area and potential for contamination, ensure that only enough supplies and equipment to complete a specific job will be stored on-site.

(2) Complete vehicle staging, cleaning, maintenance, refueling, and fuel storage in a vehicle staging area placed 150 ft or more from any stream, water body or wetland, unless otherwise approved in writing by NOAA Fisheries.

(3) Inspect all vehicles operated within 150 ft of any stream, water body or wetland daily for fluid leaks before leaving the vehicle staging area. Repair any leaks detected in the vehicle staging area before the vehicle resumes operation. Document inspections in a record that is available for review on request by Corps or NOAA Fisheries.

(4) Before operations begin and as often as necessary during operation, steam clean all equipment that will be used below bankfull elevation until all visible external oil, grease, mud, and other visible contaminates are removed.

(5) Diaper all stationary power equipment (*e.g.*, generators, cranes, stationary drilling equipment) operated within 150 ft of any stream, waterbody or wetland to prevent leaks, unless suitable containment is provided to prevent potential spills from entering any stream or waterbody.

i. Site preparation. Conserve native materials for site restoration.

i. If possible, leave native materials where they are found.

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[4] When available, certified weed-free straw or hay bales will be used to prevent introduction of noxious weeds.

ii. If materials are moved, damaged or destroyed, replace them with a functional equivalent during site restoration.

iii. Stockpile any large wood[5], native vegetation, weed-free topsoil, and native channel material displaced by construction for use during site restoration.

j. Stormwater management. Prepare and carry out a stormwater management plan for any project that will produce a new impervious surface or a land cover conversion that slows the entry of water into the soil. The plan must be available for inspection on request by Corps or NOAA Fisheries.

i. Plan contents. The goal is to avoid and minimize adverse effects due to the quantity and quality of stormwater runoff for the life of the project by maintaining or restoring natural runoff conditions. The plan will meet the following criteria and contain the pertinent elements listed below, and meet requirements of all applicable laws and regulations.

(1) A system of management practices and, if necessary, structural facilities, designed to complete the following functions.

(a) Minimize, disperse and infiltrate stormwater runoff onsite using sheet flow across permeable vegetated areas to the maximum extent possible without causing flooding, erosion impacts, or long-term adverse effects to groundwater.

(b) Pretreat stormwater from pollution generating surfaces, including bridge decks, before infiltration or discharge into a freshwater system, as necessary to minimize any nonpoint source pollutant (*e.g.*, debris, sediment, nutrients, petroleum hydrocarbons, metals) likely to be present in the volume of runoff predicted from a 6-month, 24-hour storm.[6]

(c) Ensure that the duration of post project discharge matches the pre-developed discharge rates from 50% of the 2-year peak flow up to the 50-year peak flow.

(2) For projects that require engineered facilities to meet stormwater requirements, use a continuous rainfall/runoff model, if available for the project area, to calculate stormwater facility water quality and flow control rates.

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[5] For purposes of this Opinion only, 'large wood' means a tree, log, or rootwad big enough to dissipate stream energy associated with high flows, capture bedload, stabilize streambanks, influence channel characteristics, and otherwise support aquatic habitat function, given the slope and bankfull channel width of the stream in which the wood occurs. See, Oregon Department of Forestry and Oregon Department of Fish and Wildlife, *A Guide to Placing Large Wood in Streams*, May 1995 (www.odf.state.or.us/FP/RefLibrary/LargeWoodPlacemntGuide5-95.doc).

[6] A 6-month, 24-hour storm may be assumed to be 72% of the 2-year, 24-hour amount. See, Washington State Department of Ecology (2001), Appendix I-B-1.

(3) Use permeable pavements for load-bearing surfaces, including multiple-use trails, to the maximum extent feasible based on soil, slope, and traffic conditions.

(4) Install structural facilities outside wetlands or the riparian buffer area[7] whenever feasible, otherwise, provide compensatory mitigation to offset any long-term adverse effects.

(5) Document completion of the following activities according to a regular schedule for the operation, inspection and maintenance of all structural facilities and conveyance systems, in a log available for inspection on request by the Corps and NOAA Fisheries.

(a) Inspect and clean each facility as necessary to ensure that the design capacity is not exceeded, heavy sediment discharges are prevented, and whether improvements in operation and maintenance are needed.

(b) Promptly repair any deterioration threatening the effectiveness of any facility.

(c) Post and maintain a warning sign on or next to any storm drain inlet that says, as appropriate for the receiving water, 'Dump No Waste - Drains to Ground Water, Streams, or Lakes.'

(d) Only dispose of sediment and liquid from any catch basin in an approved facility.

ii. <u>Runoffs/discharge into a freshwater system</u>. When stormwater runoff will be discharged directly into fresh surface water or a wetland, or indirectly through a conveyance system, the following requirements apply.

(1) Maintain natural drainage patterns and, whenever possible, ensure that discharges from the project site occur at the natural location.

(2) Use a conveyance system comprised entirely of manufactured elements (*e.g.*, pipes, ditches, outfall protection) that extends to the ordinary high water line of the receiving water.

(3) Stabilize any erodible elements of this system as necessary to prevent erosion.

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[7] For purposes of this Opinion only, 'riparian buffer area' means land: (1) Within 150 ft of any natural water occupied by listed salmonids during any part of the year or designated as critical habitat; (2) within 100 ft of any natural water within 1/4 mile upstream of areas occupied by listed salmonids or designated as critical habitat and that is physically connected by an above-ground channel system such that water, sediment, or woody material delivered to such waters will eventually be delivered to water occupied by listed salmon or designated as critical habitat; and (3) within 50 ft of any natural water upstream of areas occupied by listed salmonids or designated as critical habitat and that is physically connected by an above-ground channel system such that water, sediment, or woody material delivered to such waters will eventually be delivered to water occupied by listed salmon or designated as critical habitat. 'Natural water' means all perennial or seasonal waters except water conveyance systems that are artificially constructed and actively maintained for irrigation.

(4) Do not divert surface water from, or increase discharge to, an existing wetland if that will cause a significant adverse effect to wetland hydrology, soils or vegetation.

(5) The velocity of discharge water released from an outfall or diffuser port may not exceed 4 ft/s, and the maximum size of any aperture may not exceed one inch.

k. Site restoration. Prepare and carry out a site restoration plan as necessary to ensure that all streambanks, soils and vegetation disturbed by the project are cleaned up and restored as follows. Make the written plan available for inspection on request by the Corps or NOAA Fisheries.

i. General considerations.

(1) Restoration goal. The goal of site restoration is renewal of habitat access, water quality, production of habitat elements (*e.g.*, large woody debris), channel conditions, flows, watershed conditions and other ecosystem processes that form and maintain productive fish habitats.

(2) Streambank shaping. Restore damaged streambanks to a natural slope, pattern and profile suitable for establishment of permanent woody vegetation, unless precluded by pre-project conditions (*e.g.*, a natural rock wall).

(3) Revegetation. Replant each area requiring revegetation before the first April 15 following construction. Use a diverse assemblage of species native to the project area or region, including grasses, forbs, shrubs and trees. Noxious or invasive species may not be used.

(4) Fencing. Install fencing as necessary to prevent access to revegetated sites by livestock or unauthorized persons.

ii. Plan contents. Include each of the following elements.

(1) Responsible party. The name and address of the party(s) responsible for meeting each component of the site restoration requirements, including providing and managing any financial assurances and monitoring necessary to ensure restoration success.

(2) Baseline information. This information may be obtained from existing sources (*e.g.*, land use plans, watershed analyses, subbasin plans), where available.

(a) A functional assessment of adverse effects, *i.e.*, the location, extent and function of the riparian and aquatic resources that will be adversely affected by construction and operation of the project.

(b) The location and extent of resources surrounding the restoration site, including historic and existing conditions.

(3) Goals and objectives. Restoration goals and objectives that describe the extent of site restoration necessary to offset adverse effects of the project, by aquatic resource type.

(4) Performance standards. Use these standards to help design the plan and to assess whether the restoration goal is met. While no single criterion is sufficient to measure success, the intent is that these features should be present within reasonable limits of natural and management variation.

(a) Bare soil spaces are small and well dispersed.

(b) Soil movement, such as active rills or gullies and soil deposition around plants or in small basins, is absent or slight and local.

(c) If areas with past erosion are present, they are completely stabilized and healed.

(d) Plant litter is well distributed and effective in protecting the soil with few or no litter dams present.

(e) Native woody and herbaceous vegetation, and germination microsites, are present and well distributed across the site.

(f) Vegetation structure is resulting in rooting throughout the available soil profile.

(g) Plants have normal, vigorous growth form, and a high probability of remaining vigorous, healthy and dominant over undesired competing vegetation.

(h) High impact conditions confined to small areas necessary access or other special management situations.

(i) Streambanks have less than 5% exposed soils with margins anchored by deeply rooted vegetation or coarse-grained alluvial debris.

(j) Few upland plants are in valley bottom locations, and a continuous corridor of shrubs and trees provide shade for the entire streambank.

(5) Work plan. Develop a work plan with sufficient detail to include a description of the following elements, as applicable.

(a) Boundaries for the restoration area.

(b) Restoration methods, timing, and sequence.

(c) Water supply source, if necessary.

(d) Woody native vegetation appropriate to the restoration site.[8] This must be a diverse assemblage of species that are native to the project area or region, including grasses, forbs, shrubs and trees. This may include allowances for natural regeneration from an existing seed bank or planting.

(e) A plan to control exotic invasive vegetation.

[8] Use references sites to select vegetation for the mitigation site whenever feasible. Historic reconstruction, vegetation models, or other ecologically-based methods may also be used as appropriate.

(f) Elevation(s) and slope(s) of the restoration area to ensure they conform with required elevation and hydrologic requirements of target plant species.

(g) Geomorphology and habitat features of stream or other open water.

(h) Site management and maintenance requirements.

(6) Five-year monitoring and maintenance plan.

(a) A schedule to visit the restoration site annually for 5 years or longer as necessary to confirm that the performance standards are achieved. Despite the initial 5-year planning period, site visits and monitoring will continue from year-to-year until the Corps certifies that site restoration performance standards have been met.

(b) During each visit, inspect for and correct any factors that may prevent attainment of performance standards (*e.g.*, low plant survival, invasive species, wildlife damage, drought).

(c) Keep a written record to document the date of each visit, site conditions and any corrective actions taken.

l. Isolation of in-water work area. If adult or juvenile fish are reasonably certain to be present, or if the work area is 300 ft upstream of spawning habitats, completely isolate the work area from the active flowing stream using inflatable bags, sandbags, sheet pilings, or similar materials, unless otherwise approved in writing by NOAA Fisheries.

i. To prevent concrete and discharge water from reaching waterways, the work area will be isolated using one of the following methods:

(1) Isolate the work area and completely dewater to allow concrete footing to be poured on the dry riverbed.

(2) Isolate the work area and continuously pump out discharge water to create negative water pressure inside the isolated area.

(3) Another isolation method that prevents concrete and discharge water from entering the waterway, as approved in writing by NOAA Fisheries.

m. Capture and release. Before and intermittently during pumping to isolate an in-water work area, attempt to capture and release fish from the isolated area using trapping, seining, electrofishing, or other methods as are prudent to minimize risk of injury.

i. The entire capture and release operation must be conducted or supervised by a fishery biologist experienced with work area isolation and competent to ensure the safe handling of all ESA-listed fish.

ii. Do not use electrofishing if water temperatures exceed 18°C.

iii. If electrofishing equipment is used to capture fish, comply with NOAA Fisheries' electrofishing guidelines.[9]

iv. Handle ESA-listed fish with extreme care, keeping fish in water to the maximum extent possible during seining and transfer procedures to prevent the added stress of out-of-water handling.

v. Transport fish in aerated buckets or tanks.

vi. Release fish into a safe release site as quickly as possible, and as near as possible to capture sites.

vii. Do not transfer ESA-listed fish to anyone except NOAA Fisheries personnel, unless otherwise approved in writing by NOAA Fisheries.

viii. Obtain all other Federal, state, and local permits necessary to conduct the capture and release activity.

ix. Allow NOAA Fisheries or its designated representative to accompany the capture team during the capture and release activity, and to inspect the team's capture and release records and facilities.

2. To implement reasonable and prudent measure #2 (herbicide use), the Corps shall:

a. Best management practices for application of herbicides.

i. All vegetation removal will be restricted to above the ground surface, thus leaving the root systems intact and retaining bank stability.

ii. Within 100 ft of each side of any waterway vegetation taller than 15 ft may be cut to the 15 ft level.

iii. No Garlon will be applied with a 100-foot buffer on either side of all streams with ESA-listed fish. Rodeo may be used within this area.

iv. Trained individuals will apply herbicides using only low pressure spot spray and direct wicking application methods. All herbicide applications will be conducted in accordance with label instructions.

v. Spray activities will only occur during dry, calm weather conditions to prevent drift and runoff. No spraying will occur during winds greater than five mph or during rain events. No spraying of the herbicide will occur if rain is forecast within 24 hours.

vi. Spill response procedures have been developed and reviewed with each applicator before commencing herbicide application operations.

vii. All chemical storage, chemical mixing, and post-application equipment cleaning is completed in such a manner as to prevent the potential contamination of any perennial or intermittent waterbody, unprotected ephemeral waterway, or wetland.

viii. Use only those sprayers with a single nozzle, such as back pack or hand sprayers, to spray the herbicide in the riparian zone.

ix. All hand operated application equipment is leak and spill proof.

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[9] National Marine Fisheries Service, *Backpack Electrofishing Guidelines* (December 1998) (http://www.nwr.noaa.gov/1salmon/salmesa/pubs/electrog.pdf).

x. Herbicide applications are prohibited when precipitation is occurring or forecast to occur within the next 24 hours, or if windspeeds are over 5 miles per hour.
xi. A licensed/certified herbicide applicator is conducting all spray projects.
xii. Only the minimum area necessary for the control of noxious weeds is treated.
xiii. All equipment used for transportation, storage, or application of chemicals be maintained in an area that is constructed to fully contain all chemicals, and not loaded or unloaded within 300 ft of any perennial or intermittent stream or water body.

3. To implement reasonable and prudent measure #3 (monitoring), the Corps shall:

a. <u>Implementation monitoring</u>. Ensure the applicant submits a monitoring report to the Corps within 120 days of project completion describing the applicant's success meeting his or her permit conditions. Each project level monitoring report will include the following information.
   i. <u>Project identification</u>
      (1) Applicant name, permit number, and project name.
      (2) Project location, including any compensatory mitigation site(s), by 5th field HUC and by latitude and longitude as determined from the appropriate USGS 7-minute quadrangle map.
      (3) Corps contact person.
      (4) Starting and ending dates for work completed.
   ii. <u>Photo documentation</u>. Photos of habitat conditions at the project and any compensation site(s), before, during, and after project completion.[10]
      (1) Include general views and close-ups showing details of the project and project area, including pre and post construction.
      (2) Label each photo with date, time, project name, photographer's name, and a comment about the subject.
   iii. <u>Other data</u>. Additional project-specific data.
      (1) <u>Work cessation</u>. Dates work ceased due to high flows, if any.
      (2) <u>Fish screen</u>. Evidence of compliance with NOAA Fisheries' fish screen criteria.
      (3) <u>Pollution control</u>. A summary of pollution and erosion control inspections, including any erosion control failure, contaminant release, and correction effort.
      (4) <u>Site preparation</u>.
         (a) Total cleared area – riparian and upland.
         (b) Total new impervious area.

[10] Relevant habitat conditions may include characteristics of channels, eroding and stable streambanks in the project area, riparian vegetation, water quality, flows at base, bankfull and over-bankfull stages, and other visually discernable environmental conditions at the project area, and upstream and downstream of the project.

(5) Site restoration. Photo or other documentation that site restoration performance standards were met.

iv. If a listed species specimen is found dead, sick, or injured, as a possible result of the proposed action or other unnatural cause, initial notification should be made to the NOAA Fisheries Law Enforcement Office, Vancouver Field Office, 600 Maritime, Suite 130, Vancouver, Washington 98661; telephone: 360.418.4246. Care should be taken in handling sick or injured specimens to ensure effective treatment and care or the handling of dead specimens to preserve biological material in the best possible state for later analysis of cause of death. In conjunction with the care of sick or injured endangered and threatened species or preservation of biological materials from a dead animal, the finder has the responsibility to carry out instructions provided by Law Enforcement to ensure that evidence intrinsic to the specimen is not unnecessarily disturbed.

b. Monitoring herbicide application.

i. Non-target plant mortality in riparian areas will be monitored if mortality of non-target plants is affecting riparian function.

ii. After treatment, provide NOAA Fisheries with a list of the following information:

(1) Acres treated
(2) Application method
(3) Herbicide used (including concentration and amount)
(4) Date of treatment, weather
(5) Name of applicator
(6) Report of accidents, if any.

3. MAGNUSON-STEVENS ACT

3.1 Background

The Magnuson-Stevens Fishery Conservation and Management Act (MSA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 104-267), established procedures designed to identify, conserve, and enhance essential fish habitat (EFH) for those species regulated under a Federal fisheries management plan. Pursuant to the MSA:

- Federal agencies must consult with NOAA Fisheries on all actions, or proposed actions, authorized, funded, or undertaken by the agency, that may adversely affect EFH (§305(b)(2)).

- NOAA Fisheries must provide conservation recommendations for any Federal or state action that would adversely affect EFH (§305(b)(4)(A)).

- Federal agencies must provide a detailed response in writing to NOAA Fisheries within 30 days after receiving EFH conservation recommendations. The response must include a description of measures proposed by the agency for avoiding, mitigating, or offsetting the impact of the activity on EFH. In the case of a response that is inconsistent with NOAA Fisheries EFH conservation recommendations, the Federal agency must explain its reasons for not following the recommendations (§305(b)(4)(B)).

EFH means those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity (MSA §3). For the purpose of interpreting this definition of EFH: "Waters" include aquatic areas and their associated physical, chemical, and biological properties that are used by fish and may include aquatic areas historically used by fish where appropriate; "substrate" includes sediment, hard bottom, structures underlying the waters, and associated biological communities; "necessary" means the habitat required to support a sustainable fishery and the managed species' contribution to a healthy ecosystem; "spawning, breeding, feeding, or growth to maturity" covers a species' full life cycle (50 CFR 600.10), and "adverse effect" means any impact which reduces quality and/or quantity of EFH, and may include direct (*e.g.*, contamination or physical disruption), indirect (*e.g.*, loss of prey or reduction in species fecundity), site-specific or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions (50 CFR 600.810).

EFH consultation with NOAA Fisheries is required regarding any Federal agency action that may adversely affect EFH, including actions that occur outside EFH, such as certain upstream and upslope activities.

The objectives of this EFH consultation are to determine whether the proposed action would adversely affect designated EFH and to recommend conservation measures to avoid, minimize, or otherwise offset potential adverse effects to EFH.

3.2 Identification of EFH

Pursuant to the MSA the Pacific Fisheries Management Council (PFMC) has designated EFH for federally-managed fisheries within the waters of Washington, Oregon, and California. Designated EFH for groundfish and coastal pelagic species encompasses all waters from the mean high water line and upriver extent of saltwater intrusion in river mouths, along the coasts of Washington, Oregon and California, seaward to the boundary of the U.S. exclusive economic zone (370.4 km) (PFMC 1998a, 1998b). Freshwater EFH for Pacific salmon includes all those streams, lakes, ponds, wetlands, and other waterbodies currently, or historically accessible to salmon in Washington, Oregon, Idaho, and California, except areas upstream of certain impassable man-made barriers (as identified by the PFMC 1999), and longstanding, naturally-impassable barriers (*i.e.*, natural waterfalls in existence for several hundred years) (PFMC 1999). In estuarine and marine areas, designated salmon EFH extends from the nearshore and tidal submerged environments within state territorial waters out to the full extent of the exclusive economic zone (370.4 km) offshore of Washington, Oregon, and California north of Point Conception to the Canadian border (PFMC 1999).

Detailed descriptions and identifications of EFH are contained in the fishery management plans for groundfish (PFMC 1998a), coastal pelagic species (PFMC 1998b), and Pacific salmon (PFMC 1999). Casillas *et al.* (1998) provides additional detail on the groundfish EFH habitat complexes. Assessment of the potential adverse effects to these species' EFH from the proposed action is based, in part, on these descriptions and on information provided by the Corps.

3.3 Proposed Actions

The proposed action and action area are detailed above in sections 1.2 and 2.1.1 of this Opinion. The action area includes habitats that have been designated as EFH for various life-history stages of starry flounder *(Platichthys stellatus)* and chinook and coho salmon.

3.4 Effects of Proposed Action

As described in detail in section 2.1.5 of this document, the proposed action will result in short-term adverse effects to a variety of habitat parameters. These adverse effects are: Decreased water quality (turbidity) and potential for hazardous materials spills.

3.5 Conclusion

NOAA Fisheries concludes that the proposed action will adversely affect the EFH for starry flounder *(Platichthys stellatus)* and chinook and coho salmon.

3.6 EFH Conservation Recommendations

Pursuant to section 305(b)(4)(A) of the MSA, NOAA Fisheries is required to provide EFH conservation recommendations to Federal agencies regarding actions which may adversely affect EFH. While NOAA Fisheries understands that the conservation measures described in the BA will be implemented by the Corps, it does not believe that these measures are sufficient to address the adverse impacts to EFH described above. However, the terms and conditions outlined in section 2.2.3 are generally applicable to designated EFH for the species designated in section 3.3, and address these adverse effects. Consequently, NOAA Fisheries incorporates them here as EFH conservation measures.

3.7 Statutory Response Requirement

Pursuant to the MSA (§305(b)(4)(B)) and 50 CFR 600.920(j), Federal agencies are required to provide a detailed written response to NOAA Fisheries' EFH conservation recommendations within 30 days of receipt of these recommendations. The response must include a description of measures proposed to avoid, mitigate, or offset the adverse impacts of the activity on EFH. In the case of a response that is inconsistent with the EFH conservation recommendations, the response must explain the reasons for not following the recommendations, including the scientific justification for any disagreements over the anticipated effects of the proposed action and the measures needed to avoid, minimize, mitigate, or offset such effects.

3.8 Supplemental Consultation

The Corps must reinitiate EFH consultation with NOAA Fisheries if the proposed action is substantially revised in a manner that may adversely affect EFH, or if new information becomes available that affects the basis for NOAA Fisheries' EFH conservation recommendations (50 CFR 600.920(k)).

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Table 1. References for Additional Background on Listing Status, Biological Information, Protective Regulations, and Critical Habitat Elements for the ESA-Listed Species Considered in this Consultation.

Species ESU	Status	Critical Habitat[11]	Protective Regulations	Biological Information, Historical Population Trends
Chinook salmon (*O. Tshawytscha*)				
Snake River fall-run	T 4/22/92; 57 FR 14653[12]	12/28/93; 58 FR 68543	7/10/00; 65 FR 42422	Waples *et al.* 1991b; Healey 1991
Snake River spring/summer-run	T 4/22/92; 57 FR 14653[2]	10/25/99; 64 FR 57399[13]	7/10/00; 65 FR 42422	Matthews and Waples 1991; Healey 1991
Lower Columbia River	T 3/24/99; 64 FR 14308		7/10/00; 65 FR 42422	Myers *et al.*1998; Healey 1991
Upper Willamette River	T 3/24/99; 64 FR 14308		7/10/00; 65 FR 42422	Myers *et al.*1998; Healey 1991
Upper Columbia River spring-run	E 3/27/99; 64 FR 14308		7/10/00; 65 FR 42422	Myers *et al.*1998; Healey 1991
Chum salmon (*O. keta*)				
Columbia River	T 3/25/99; 64 FR 14508		7/10/00; 65 FR 42422	Johnson *et al.* 1997; Salo 1991
Sockeye salmon (*O. nerka*)				
Snake River	E 11/20/91; 56 FR 58619	12/28/93; 58 FR 68543	11/20/91; 56 FR 58619	Waples *et al.* 1991a; Burgner 1991
Steelhead (*O. mykiss*)				
Lower Columbia River	T 3/19/98; 63 FR 13347		7/10/00; 65 FR 42422	Busby *et al.* 1995; 1996
Middle Columbia River	T 3/25/99; 64 FR 14517		7/10/00; 65 FR 42422	Busby *et al.* 1995; 1996
Upper Columbia River	E 8/18/97; 62 FR 43937		7/10/00; 65 FR 42422	Busby *et al.* 1995; 1996
Upper Willamette River	T 3/25/99; 64 FR 14517		7/10/00; 65 FR 42422	Busby *et al.* 1995; 1996
Snake River Basin	T 8/18/97; 62 FR 43937		7/10/00; 65 FR 42422	Busby *et al.* 1995; 1996

[11] Critical habitat designations (excluding Snake River chinook and sockeye salmon) were vacated and remanded on May 7, 2002 by a Federal Court

[12] Also see 6/3/92; 57 FR 23458, correcting the original listing decision by refining ESU ranges.

[13] This corrects the original designation of 12/28/93 (58 FR 68543) by excluding areas above Napias Creek Falls, a naturally impassable barrier.